

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Mechanical Engineering
B. Tech. (Mechanical Engg.) Minor I Examination, Sept 2018

Entry No: 17bme021
 Date:

Total Number of Pages: [1]

Total Number of Questions: [2]

Course Title: Manufacturing Processes
Course Code: MEL 2133

Time Allowed: 1.5 Hours

Max Marks: [20]

Instructions / NOTE

- i. Attempt All Questions.
- ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
- iii. Assume an appropriate data / information, wherever necessary / missing

Section A			
Q1.	(a) What is the purpose of a riser in sand casting?	[2]	CO1
	(b) What are the design parameters for a riser, and what are the design constraints that you need to satisfy given your answer in (a)?	[2]	CO1
	(c) Calculate the permability number of sand if it takes 1 min 25 sec to pass 2000 cm³ of air at a pressure of 5 g/cm² through the standard sample	[2]	CO1
	(d) What should be kept in mind while choosing the positioning of the ingates	[2]	CO1
	(e) Explain normal desired characteristics of core	[2]	CO1
Q2.	(a) Explain the modulus method for riser design and judge the importance of it in modern foundry	[3]	CO1
	(b) A cube shaped casting solidifies in 5 min . Calculate the solidification time in min for a cube of the same material, which is 8 times heavier than the original casting.	[2]	CO1
	(c) A 200 mm long down sprue has an area of cross-section of 650 mm² where the pouring basin meets the down sprue (i.e. at the beginning of the down sprue). A constant head of molten metal is maintained by the pouring basin. The molten metal flow rate is 6.5×10⁵ mm³/s . Considering the end of the down sprue to be open to atmosphere and an acceleration due to gravity of 10⁴ mm/s² , design the area of the down sprue in mm ² at its end (avoiding aspiration effect).	[2]	CO1
	(d) Illustrate at least 6 different types of core which is utilized in modern foundry (just illustrate by sketching)	[3]	CO1

Course Outcomes

CO1. Able to understand casting process including designing of riser, and gating system

CO	Questions Mapping	Total Marks	Total Number of Students (to be appeared in Exam)
CO1	Q1, Q2	20	31